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the position he set forth in his first edition, he is prepared to see his argument become old-fashioned (*hinfällig*), with advance in sociological knowledge.

The author has lost none of his old-time vigor of expression, nor of his opposition to the 'organic theory.' He takes occasion to give this latter some hard blows, even though his conclusion is, "Diese 'Methode' ist ein für allemal abgetan," page 170.

J. Q. DEALEY.

BROWN UNIVERSITY,  
September 12, 1905.

#### DISCUSSION AND CORRESPONDENCE.

##### BREEDING BENEFICIAL INSECTS.

*Harper's Monthly Magazine* is a journal of such high standing and is as a rule so clean and so accurate that anything published in its pages, aside from ostensible fiction, is received by a very large reading public as bearing the stamp of absolute accuracy. It, therefore, becomes necessary whenever an inaccurate statement is published in its pages, and particularly when by such a statement a keen injustice is done to an institution or to an individual, to publish in some way and as speedily as possible an emphatic rejoinder and correction. I, therefore, wish to call attention to the article by H. A. Crafts in the October number of *Harper's Magazine*, pages 778 to 782, which bears the title of this present communication. The article refers to the excellent work which has been done in California in the breeding of beneficial insects, and more especially to the admirable quarantine carried on by that state against the possible importation of new insect pests. To these features of the article no exception can be taken, but there is another and important matter which must be corrected.

Mr. Crafts writes:

Mr. Craw [Alexander Craw, late Horticultural Quarantine Officer of California] advised that search be made in foreign countries for the parasite that would destroy the 'cottony cushion-scale.' At that time the state had enacted no horticultural laws, and there were no public funds available for the prosecution of the search suggested by Mr. Craw. But to remedy this defect

private funds were raised, and Professor Albert Koebele, an attaché of the United States Department of Agriculture, was commissioned to make the quest.

Professor Koebele in the course of his travels went to Australia, where he found a grub feeding upon the cottony cushion-scale. He took the grub and developed it to its condition of maturity, and found that it grew into a small beetle known as a 'ladybird.' At the same time the professor made a second discovery, and that was that a secondary parasite was preying upon the 'ladybird.'

Knowing that it would be fatal to the project to send the ladybird and its parasite to California together, he set about propagating a colony of the little beetles in close confinement. He accordingly had glass-houses built over two small orange-trees in an orchard that was infested with the cottony cushion-scale, and beneath these he bred up some strong colonies of the ladybirds and sent them to Mr. Craw.

Upon their arrival in California the process of propagation was continued and a large number of the bugs raised. \* \* \*

The insects thus raised by Mr. Craw were sent out in small colonies all over the state wherever there was an orange or lemon orchard affected by the cottony cushion-scale and turned loose in the trees. The result was the speedy cleaning up of the pest, and it has remained in subjection ever since. And thus the great citrus-fruit industry of California was saved.

In these statements Mr. Crafts has done a great injustice to the United States Department of Agriculture, and to the late C. V. Riley, at that time (1888-90) chief entomologist of the department. The facts briefly are these. Prior to the Australian expedition of Mr. Koebele, Professor Riley was in California. He attended, with Mr. Craw, a large horticultural meeting, and the subject of sending abroad for parasites was broached at this meeting. It is quite possible that Professor Riley got the original idea from Mr. Craw. Here, however, Mr. Craw's connection with the introduction ceases; nor do I think Mr. Craw has ever made any personal claim which would in any further way substantiate the statements made by Mr. Crafts, just quoted. Professor Riley returned to Washington, corresponded with entomologists in Australia,

but was unable to devote funds from his appropriation to send an assistant to Australia, for the reason that congress at that time restricted travel to the limits of the United States. There was an exposition that year in Melbourne, and he, therefore, called upon the late Thomas F. Bayard, at that time secretary of state, and urged that the traveling expenses of an assistant be paid, for this purpose, from the funds set aside for the exhibition by the United States at the Melbourne exposition, and of which the Department of State had control. His request was granted, and Mr. Albert Koebele, an assistant in the Division of Entomology, was sent over, his expenses simply being paid by the Department of State and his salary by the Department of Agriculture. Mr. Koebele secured the ladybirds, and in the meantime another agent of the Department of Agriculture, Mr. D. W. Coquillett, stationed at Los Angeles, Calif., had prepared a gauze tent over an infested orange tree. All of Mr. Koebele's shipments were sent direct to this assistant of the division of entomology, and not to Mr. Craw. It was at the Los Angeles station of the division that the insects were propagated, and from which they were sent, and not until considerably later did Mr. Craw, as an agent of the state board of horticulture, have anything to do with the matter. When he did take it up, however, he prosecuted the work very successfully, and during the remainder of his term of office (he is now in the employ of the territorial government of Hawaii) he did a great and good work with other beneficial insects. Thus it will be seen that the introduction and establishment of the ladybirds were done by Professor Riley's assistants, the expenses of Koebele to Australia being paid by the Department of State.

It so happened that one of the United States commissioners to the Melbourne exposition was the late Frank McCoppin, and Mr. McCoppin also recommended that the funds for Mr. Koebele's expenses be paid by the Department of State. Mr. McCoppin always claimed, in his lifetime, the full credit for the whole thing, but the facts are as I have stated, and they are within my immediate knowledge,

since at the time I was first assistant to Professor Riley and was intimately acquainted with everything that was going on.

The introduction of this insect was one of Riley's greatest achievements, since it established a principle upon which much good work has since been done in many parts of the world; and it should be stated to his further credit that he was sanguine of success at the start, and that the work was carried through against the predictions of his two oldest assistants, Mr. E. A. Schwarz and myself, both of us having urged against the probability of the establishment in the nearctic life zone of an insect belonging to the Australasian fauna.

To Mr. Craw, therefore, belongs the credit of being, if not the original suggester of the plan, at least one of the first suggesters, and also the credit of having, some time after the introduction and perfect establishment of the insect, had charge of its propagation. To Mr. McCoppin belongs only the credit of having facilitated Mr. Koebele's work by recommending that his expenses be paid from the Melbourne exposition fund. To Riley and the Department of Agriculture belongs the credit of having, by investigations, shown exactly the spot to go for the supposed beneficial insects; for having furnished the man to go to Australia, and having paid his salary; for having induced wholly or partially the secretary of state to consent to the payment of the traveling expenses from the Melbourne exposition fund; for the preparations for the receipt of the beneficial insects at Los Angeles; and for having cared for them and supervised their establishment, propagation and distribution for many months after arrival, thus bringing about the wonderful results which followed.

L. O. HOWARD.

#### NOMENCLATURE AT THE INTERNATIONAL BOTANICAL CONGRESS AT VIENNA.

TO THE EDITOR OF SCIENCE: I have read with much interest Dr. Britton's account in your issue for August 18 of the action in regard to nomenclature taken at the recent International Botanical Congress at Vienna. So far so good. The action seems to have been about what was expected by most Amer-